Software Requirements Specification

for

SEJT

Version 1.0.1 Approved

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10/16/21

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Revision History

Name	Date	Reason For Changes	Version
Ilya Shvabskiy Calvin Cheung Allan Krasner Swanand Vidwans Aayush Trivedi	10/16/21	First Edition	1.0
Allan Krasner Calvin Cheung Ilya Shvabskiy Swanand Vidwans	10/21/21	Enhanced Edition	1.0.1

1. Introduction

1.1 Purpose

This document is intended to cover the domain of SEJT, Software Engineering Job Tool. The scope of requirements detailed in this document spans the entire application.

1.2 Document Conventions

SEJT – Software Engineering Job Tool

This is the name of our Project. As the name suggests this application will be a software engineering job tool used to help software engineers to find the most common set of skills in the software engineering job title.

DB – Database

PaaS – Platform as a Service

"Platform as a service (PaaS) or application platform as a service (aPaaS) or platform-based service is a category of cloud computing services that allows customers to provision, instantiate, run, and manage a modular bundle comprising a computing platform and one or more applications, without the complexity of building and maintaining the infrastructure typically associated with developing and launching the application(s); and to allow developers to create, develop, and package such software bundles." [1]

SaaS – Software as a Service

Software as a service (SaaS)is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. SaaS is also known as "on-demand software" and Web-based/Web-hosted software. SaaS is considered to be part of cloud computing, along with infrastructure as a service (IaaS), platform as a service (PaaS), desktop as a service (DaaS), managed software as a service (MSaaS), mobile backend as a service (MBaaS), datacenter as a service (DCaaS), integration platform as a service (iPaaS), and information technology management as a service (ITMaaS).[2]

FOSS – Free Open-Source Software

Free and open-source software (FOSS) is software that is both free software and open-source software[a] where anyone is freely licensed to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software.[3]

SE – Software Engineering

WoW - Week over Week

MoM - Month over Month

1.3 Intended Audience and Reading Suggestions

This document is intended for any developer affiliated with the project and any auditor interested in examining documentation related to SEJT.

1.4 Product Scope

SEJT will be a web application which provides an analytical service by collecting job listings posted on public employment websites and displaying them sorted in various configurations. The purpose of this software is to provide users with an easy way to draw conclusions about the SE job market as it changes over time & as it pertains to employer skill demands. This software benefits those who are interested in viewing the SE job market from a macro perspective or find it advantageous to keep up with in demand skill trends.

Note. For the purpose of developing a working MVP, the results will be localized to Software Engineering Jobs in New York City, NY, United States.

Example macro perspectives may include but are not limited to

A user observing the WoW or MoM growth for job listings with n criteria may find merit in growth of a certain coding language. That observation could compel the user to increase their allocation of time to learning that language so that they may have a better chance at getting a job.

A user who knows go lang is interested to see if the number of job listings is growing for go lang so they view the growth of go lang as a plot. They may want to know how go is doing in reference to java in the same time space. They plot both against each other.

1.5 References

[1] - https://en.wikipedia.org/wiki/Platform_as_a_service
[2] - https://en.wikipedia.org/wiki/Software_as_a_service
[3] - https://en.wikipedia.org/wiki/Free_and_open-source_software

2. Overall Description

2.1 Product Perspective

SEJT is a derivative work based on information gathered from employment websites. SEJT does not replace or establish a new system.

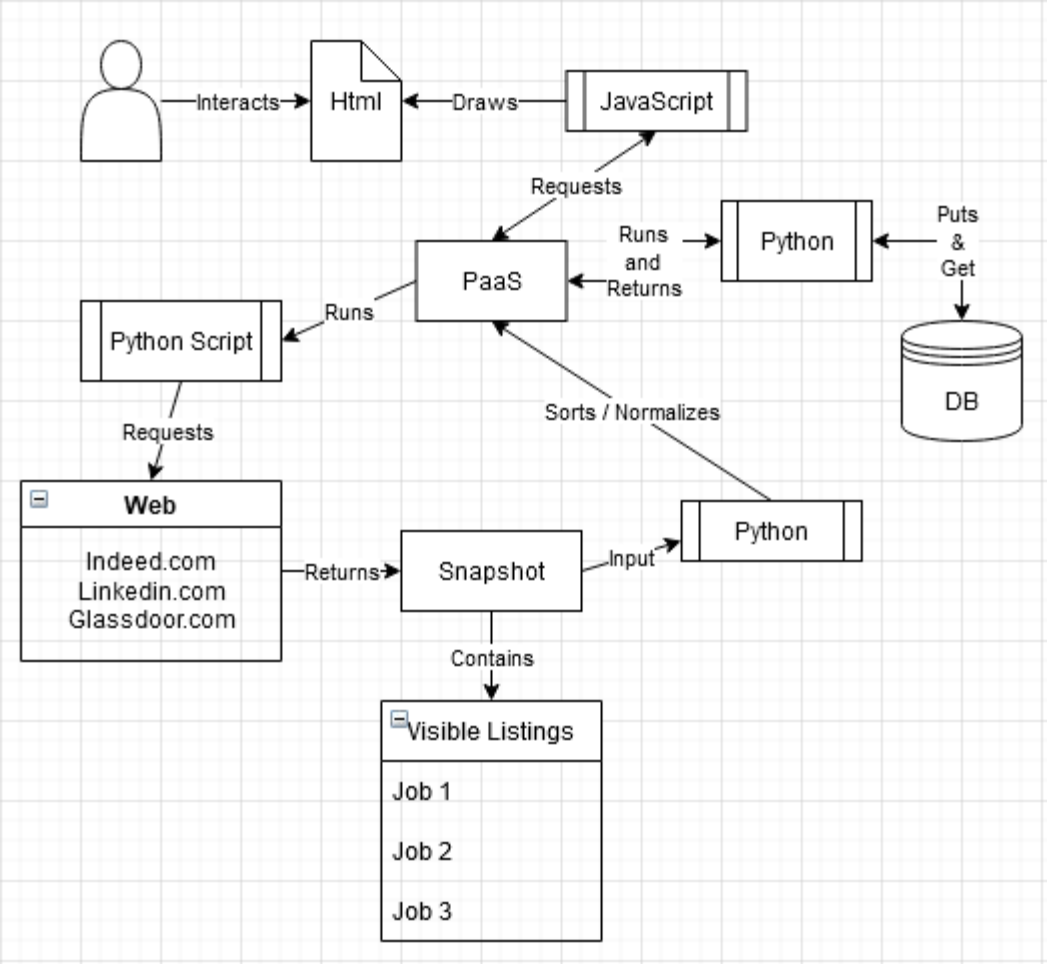

*Figure 1. A diagram depicting the proposed data flow of SEJT. It is **not** intended to be used as a reference or requirement, but to enhance the comprehension of scope.*

2.2 Product Functions

SEJT…

Must collect job openings from employment sites
such as:

- Indeed
- Glassdoor (?)
- LinkedIn (?)
- Monster (?)
- Handshake (?)
- ZipRecruiter (?)

Must store collected jobs in a database.
such as:

- Software Engineer
- Quality Assurance
- Software Developer
    - back-end
    - front-end
    - full-stack
- Software Designer
- Requirements engineer
- UX / UI Designer
- Dev-ops
- Project Manager
- Product Manager
- System Admin

Must make all information accessible and correct.
Must facilitate all functionality that a user of SEJT must have access to.

A user of SEJT …

Must have access to all collected information.
Must be able to sort jobs by specific criteria.
criterias such as:
Full time , Part Time , and Internships
Entry, Junior and Senior Level
Salary
Location
Sponsorships
Coding Languages
Non-Coding Skills
Must be able to view jobs as a plot, bar or pie chart.
Must be able to apply statistical functions to plots.

2.3 User Classes and Characteristics

SEJT will only have one user class and it will be called Generic. Functionality is global therefore this is no purpose for user accounts.

2.4 Operating Environment

SEJT must operate in Firefox, Chrome and Edge. SEJT will run on Azure App Service.

2.5 Design and Implementation Constraints

SEJT may be constrained in the quantity of data it collects simply because it is requesting resources in a manner that can be classified as scraping. Companies take measures to reduce the number of requests that can be made if a request is presumed to be by a machine. A potential solution is to use a third party to collect the information. One candidate is Octoparse.

2.6 User Documentation

SEJT must have documentation in the form of screenshots available upon release.

2.7 Assumptions and Dependencies

Empty

3. External Interface Requirements

3.1 User Interfaces

SEJT's web interface…
- Should include a view to display charts.
- Should include a view to display jobs.
- Should include a view to configure charts.
  - Of which should…
    - Display options for the amount of charts, <= 3.
    - Display options for the style of charts from, Pie, Bar, Plot
    - Display coloring options for each chart.
    - Display annotation options for each chart.
    - Display options to enable statistical functions plotted such as.

Linear Regression, Moving Average, Standard Deviation Distributions.
- Should include a view to sort jobs.

Of which should…
Display selectable sorting criterion such as
Full time , Part Time , and Internships
Entry, Junior and Senior Level
Salary
Location
Sponsorships
Coding Languages
Non-Coding Skills
Should include functionality to change window sizes.
Should include functionality to hide views.
Should conform to Material UI's framework.
Should include search functionality which indexes job names.
Should include a comparator button which allows two jobs to be compared.

3.2 Hardware Interfaces

SEJT is a web based application therefore there are no hardware interfaces.

3.3 Software Interfaces

SEJT's Interfaces with software…
Platforms as a Service such as :
Microsoft Azure App Service -
Handles web application hosting and management.e
Python Frameworks such as :
Beautiful Soup 4.9.0 -
Handles requests, back end computation and scraping functionality.
Selenium - Browser automation
Javascript Frameworks such as :
React JS 17.0.2 -
Handles the front end functionality and rendering.
Databases such as :
MySQL 8.0.26 -
Handles storage of data.
Web browsers such as :
Google Chrome
Mozilla Firefox
Microsoft Edge
Platform from which web applications interface with.
Web drivers such as :
GeckoDriver - Interfaces with selenium.

3.4 Communications Interfaces

Empty

4. System Features

4.1 Search Bar

4.1.1 The users shall be able to search through all scrapes to find through a search bar. This will be a high priority feature.

4.1.2 The Users shall click on the search bar (as of now only works for software engineering) and be able to search by job title. The users will then click the enter button or hit the enter button on their keyboard to prompt the system to search for their criteria.

4.2 Job Filtering

4.2.1 The Users shall be able to click on selected categories and filter their job options by:
- 4.2.1.1 Full-time, Part-time, Internship.
- 4.2.1.2 Entry Level, Junior Level, and/or Senior Level
- 4.2.1.3 Salary
- 4.2.1.4 Location
- 4.2.1.5 Sponsorships
- 4.2.1.6 Coding Languages
- 4.2.1.7 Skills (not coding related)

4.3 Job Scape

4.3.1 The system shall be able to scrape jobs from LinkedIn, Indeed, and Glassdoor.
4.3.2 The system shall also be able to scrape the searched job posts for the set of skills necessary for the job title.
4.3.3 The system shall be able to read and express the amount of times a certain skill is mentioned in all the job posts.
4.3.4 The system shall be able to read and express the type of employment that is offered.
4.3.5 The system shall be able to read and express the seniority of employment that is offered.
4.3.6 The system shall be able to read and express the salary offered, if present.
4.3.7 The system shall be able to read and express the location of employment.
4.3.8 The system shall be able to read and express the sponsorship contents.
4.3.9 The system shall be able to read and express the coding languages listed in the job description.
4.3.10 The system shall be able to read and express any skills that are listed other than coding in the job description.

4.4 Navigation Bar

4.4.1 The navigation bar shall have a search bar.

4.5 Plotting

4.5.1 The system shall be able to plot jobs by criteria listed in filters.
4.5.2 The system shall provide the user with options to select different filters.
4.5.3 The system shall provide the user with options to configure charting.
4.5.4 The system shall provide the user to change colors of charts.
4.5.5 The system shall provide options to enable statistical functions to be plotted.
4.5.6 The system shall provide options to configure the range of time series to be included in plots.

4.6 Storage

4.6.1 The system shall store all jobs that are scraped.
4.6.2 The system shall make all jobs retrievable for filtering and sorting.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Due to the lack of having verifiable performance requirements we decided to omit this section.

5.2 Safety Requirements

There are no known safety requirements. No sensitive information is transmitted or stored. Since no data will be stored it will be impossible to alter the results from a search. All information will be pulled from a trustworthy source/database (Linkedin, Indeed, Glassdoor)..

5.3 Security Requirements

There are no known security requirements. There is no sensitive information that will be stored on SEJT's servers. All information that will be shown will be public information that will be put together in one place. Even if results are altered there is no benefit for the hacker to intercept data and alter it. There will be no user accounts that will be stored on the database.

Database security must be accounted for by the platform, i.e provide authentication functionality and HTTPS must be used to prevent man in the middle attacks.

5.4 Software Quality Attributes

No quantitative verifiable attributes are available in this version.

5.5 Business Rules

This software is provided as a FOSS and only those rules are conformed to.

6. Other Requirements

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Appendix A: Glossary

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Appendix B: Analysis Models

Appendix C: To Be Determined List

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